Title (en)
METHOD FOR DIGITAL ANALYTIC CORRECTION OF PHOTORESPONSIVE MATERIAL REACTIVITY IN ADDITIVE MANUFACTURING

Title (de)
VERFAHREN ZUR DIGITALEN ANALYTISCHEN KORREKTUR DER REAKTIVITÄT VON LICHTEMPFINDLICHEM MATERIAL IN DER GENERATIVEN FERTIGUNG

Title (fr)
PROCÉDÉ DE CORRECTION ANALYTIQUE NUMÉRIQUE D'UNE RÉACTIVITÉ DE MATÉRIAU PHOTOSENSIBLE DANS LA FABRICATION ADDITIVE

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Application
EP 22769300 A 20220830

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Abstract (en)
[origin: WO2023031140A1] The invention discloses a method and system to digitally compensate for reactivity inhomogeneities of a photoresponsive material within a build volume of an additive manufacturing system, which offers significant advantages for the production of high-fidelity and high-accuracy three-dimensional objects. The method comprises a) Providing a digital model of said three-dimensional object, b) defining a sequence of patterns of light (31) from said digital model, and c) irradiating with each of said patterns of light (31) according to the defined sequence a photoresponsive material (32) that is capable of alteration of its material phase upon irradiation by light, thereby creating a three-dimensional distribution of alterations within the photoresponsive material (32) which physically reproduces said three- dimensional object, thereby creating the three-dimensional object. The step of defining said sequence of patterns of light (31) involves a compensation of an expected light intensity of said patterns of light (31) for any deviations of an alteration rate in said photoresponsive material caused by auto-acceleration or auto-deceleration, so as to obtain a constant alteration rate throughout said photoresponsive material (32), wherein said compensation is computed from a predicted three-dimensional light dose distribution in the photoresponsive material (32) and a function describing an alteration response of the photoresponsive material (32) to light dose.

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